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There is a marked spirit of conservatism dominating every part of the work. We look in vain for any recognition of the somewhat radical notions which have of late arisen in some quarters. The time-honored arrangement of orders, the time-honored genera, the time-honored rules as to capitalization, punctuation, and citation of authorities, are strictly adhered to. The Gymnosperms are still wedged in between monocotyledons and dicotyledons; Carya is Carya still, and not Hicoria; Nymphæa is Nymphæa still, and not Castalia; and even in so plain a matter as the spelling of Pirus, we have Pyrus, as in the older editions. All this, and much more like it, implies that for many years still the young botanists of America are to be made familiar with the older and quite conservative views of classification and arrangement. We had hoped for something different. Meanwhile we are glad to get the book, for it was much needed.—CHARLES E. BESSEY.

ZOOLOGY.

Zoological News.—General.—The Verhandlungen der Gesellschaft für Erdkunde (Berlin), contains an account of the biological results of the Plankton Expedition of the summer of 1889, by Prof. K. Brandt, and of the voyage itself, by Dr. Krummer. The trip seems to have been confined to the Atlantic, and returned to Kiel on November 7, after an absence of 115 days, and a run of 15,600 miles. The experience of the expedition was that the ocean, even in the tropics, was poorer in life than the North Sea and Baltic.

Protozoa.—The last report in Vol. XXXII. is by Ernst Haeckel, and concerns the curious group of organisms known as the Physemaria. These Haeckel pronounces to be sponges of affinities to the Keratosa, but modified by symbiosis with a commensal which is in most, if not in all cases, a hydro-polyp stock. Four families and eleven genera are described. In the Stannomidæ, examples of which were dredged at depths of from 2,425 to 2,925 fathoms, there is present a fibrillar spongin skeleton of thin, simple or branched spongin fibrillæ, not anastomizing nor reticulated, together with the usual symbiotic hydroids. Prof. Haeckel believes that these fibrils throw light upon the peculiar filaments of the Hircinidæ. They are monaxial keratose spicules. This report occupies ninety-two pages, and is illustrated by eight plates.

Cœlenterata.—The last volume of the Challenger Zoölogical Reports, Vols. XXXI. and XXXII., have lately been issued. The first of these contains the important report upon the Alcyonaria, by Messrs. Wright and Studer, and the comparatively short account of the pelagic fishes, by Dr. A. Gunther. Of the 189 species of Alcyonarians found by the expedition, 133 are here described as new. From the chapter upon geographical distribution, it appears that the West Indian Isles, the western shores of North America, and the Australian and Japanese seas, are the headquarters of this group. The report occupies 386 pages and is illustrated by 49 plates.

The first report in Vol. XXXII. is by G. Brook, and treats of the little known group of the Antipatharia. As most of the specimens of Antipathes preserved in museums are in a dry and shriveled condition, good diagnoses of the species are rare. Fortunately most of the Challenger examples had the polyps well preserved, and, therefore, a partial revision of the tribe has been attempted, and the classification put upon a correct natural basis. Nearly all the species are new, and are mostly from localities whence no forms were before known. Littoral forms are remarkably deficient. Besides the species found by the Challenger, other new forms already in the British Museum are described. The report contains the first detailed outlines of the structure of the group yet given. The structure of the genera is described, and the forms of the zooids, as well as the number and proportion of the mesenteries, are detailed. Four of the species occurred between 2,000 and 3,000 fathoms. The Antipatharia approach the Cerianthidæ more than the Hexactiniæ in the arrangement of the mesenteries, and in the relatively thin mesoglea, devoid of stellate connective tissue cells, the rudimentary musculature of the mesenteries, etc. This report has 222 pages, and 15 plates.

Echinodermata.—J. Georg (*Archiv für Naturgeschichte*, Sept., 1889), gives reasons for the belief that the echini excavate their holes in the rocks not by any chemical solvent, but by their teeth. As they enter young, the bottom of the hole is larger than the entrance, and thus the tenants are prisoners, dependent for food upon such forms of life as are brought by the currents, such as foraminifera, etc. Though the spines are not the prime agents in the excavating process, they aid the teeth by their rotary motion. It has been surmised by some that marine algæ, by their chemical action upon limestone, aid the urchins in the boring of their holes, but it cannot be found that algæ exert any such chemical influence, and urchins bore into sandstones, granite and lava as well as into limestones, so that there is no relation between algæ and urchin-holes. The principal object of the toothed urchins in thus excavating seems to be to find shelter from the violence of the waves. (See Fewkes, NATURALIST, Jan., 1890).

Mollusca : Annelida.—The Polyzoa collected in Japan by Dr. L. Döderlein are described in the *Archiv für Naturgeschichte*, of December, 1889, by Dr. A. Ortman, and the memoir is illustrated by four double plates.

Nos. 5 and 6 of the *Annals of Natural Sciences* (Zoöl., Vol. VII.), are occupied by M. Louis Roule's studies upon the development of the Annelida, and especially of *Enchytroedes marioni*, a new species of limicolous oligochoete. His results are somewhat startling, inasmuch as they induce him to place the mollusks and the annelids in the same group, called by him Trochozoaires. In both groups the cœlom is not a true enterocœle, since it is not derived from the archenteric diverticular, but is hollowed out, without direct relation with the archenteron, in the mass of cells that are produced by the initial mesoblastic segmentation. Moreover, both groups, as is sufficiently well-known, have similar larvæ, Trochospheres or Trochozoa. The chief difference is the polymerism of the one group and the monomerism of the other.

An immense squid, the long arms of which, although shrunk, measured 30 feet in length, and the body and short arms of which were 60 feet in circumference, was stranded in November last upon Achill Island, off the west coast of Mayo, Ireland. Some of the short arms measured four feet in circumference.

Arthropoda.—In the first and second numbers of the *Annals and Magazine of Natural History*, for 1889, M. E. L. Bouvier describes the nervous system of decapodous crustaceans, and the relations of that system to the circulatory system, giving particular attention to the Anomoura. The Carididæ have an abdominal chain of six pairs of ganglia. In the Palinuridæ these pairs are completely fused transversely, but in the Astacidæ are less so. In the Galatheidæ there are still the same number of abdominal ganglia, but they are more concentrated longitudinally, and less so transversely. In the Paguridæ the longitudinal concentration increases, while the transverse union is more remote than in the Galatheidæ. The Porcellanidæ, short though is their abdomen, have still five pairs of abdominal ganglia, while the Brachyura have the abdominal chain fused.

Dr. Walker and Dr. F. B. Mason enumerate nearly 100 species of insects in Iceland, about thirty of which are Coleoptera.

It is rather curious that not a single species of Lepidoptera has so far been discovered there. No Lepidoptera have as yet been seen upon Pitcairn's Island.

Ernst Lehrman (*Archiv für Naturgeschichte*, Sept., 1889), gives notes upon the anatomical structure of the Pentastomidæ. He treats of the body-covering, which is usually a chitinous skin, of the connective tissue, which is extraordinarily developed, of the musculature, of the nerve and sense organs, and also of those of digestion and sex.

Fishes.—It is not generally known that any of the Balistidæ have the power of producing sound. Prof. Moebius, however, has noted this peculiarity in *Balistes aculeatus*, and has recently described before the Berlin Physiological Society what he believes to be the apparatus producing it. During the drumming the skin between the clavicle and branchial arch vibrates, and the vibration seems to be caused by the motions of the post-claviculare, which forms a lever with a long and a short arm, the former of which is made to move by the action of the ventral muscles of the trunk. The short arm is thus made to move with noise on the rough inner surface of the clavicle. The swim-bladder, which lies very near, acts as a resonator.

There have lately been frequent reports of the presence of anchovies at Torquay and other southern coast fishing places, and this has been capped by the notice that they have also been found in Moray Frith.

Birds.—Many new species of birds from New Guinea and the Moluccas have been described by Hunstein Forbes and Woodford, during the last seven years, and thus the supplement to Salvadori's Accipitres, Psittaci, and Picariæ of these regions contains twelve new species of the first group, fourteen of the second, and nine of the third.

Mr. F. E.Beddard has, in a recent issue of the Proceedings of the Zoölogical Society, discoursed upon the structure of the Hornbills, especially that of the syrinx, and the muscular anatomy.

W. H. Hudson, in his Argentine Ornithology, gives an account of the manner in which *Polyborus tharus* singles out the white egret from among a crowd of other birds, apparently for no other reason than because of its shining white plumage, and he asks, how has it been possible for the two white species of South American heron to escape their enemies and continue to exist?

Mammals.—*Nature* (Nov. 7) states that about 1829 some individuals of the buffalo (*Bos bubalus*) were landed at Port Essington, and that at the present time the increase of these specimens has resulted in the existence of immense herds in certain parts of North Australia.

The columns of *Nature* have recently contained quite a controversy upon the discovery of the existence of true teeth in the jaw of the young Ornithorhynchus. This discovery is claimed by Mr. Poulton, and the structure of the teeth has been described by Mr. Oldfield Thomas. The reference to the teeth of both the young and the adult Duck-bill in the works of Sir Everard Home is asserted to have been solely to the horny plates which eventually take the place of the true teeth, and to the changes that take place in them.

The last volume issued by the venerable cetologist, P. J. Van Beneden, restricts the number of European Cetacea to twenty-six, of which seven are whalebone whales, and five ziphioids.

In the *Quarterly Journal of the Microscopical Society* A. W. Hubrecht gives the results of his studies upon the placentation of the hedgehog. The phenomena of placentation are more complex than in the ungulates, and lead up directly to those exhibited by the primates and man. But as the Insectivora are now pretty generally regarded as the most primitive of the monadelphous mammals, this takes away the importance of the division into Deciduata and Adeciduata. The Ungulata are certainly adeciduate, but among the Edentata some genera are deciduate and others adeciduate: the lemurs are also non-deciduate.